

Provisioning

Provisioning for facilities-based competitors involves coordination of commitments for installations, database entry and telephone number activation. The activities an ILEC must perform for a CLEC are comparable to new service or location changes for the ILEC's own retail customers.

Item 6: Average Installation Interval

What: The "Average Installation Interval" is the time it takes the ILEC to install physical facilities such as unbundled loops.

Why: The "Average Installation Interval" indicates whether the ILEC is providing parity in installation because it includes all of the instances in which an ILEC installs a certain class of facility for a competitor and for itself. However, parity in average actual installation intervals itself is not sufficient because of variations in the installation periods desired by customers.

Item 7: Installation Commitments Met

What: "Installation Commitments Met" measures the percent of times that the ILEC installs a facility to a CLEC customer or one of its own customers on the Customer Concurred Due Date (CCDD).

Why: Installation on a due date requires coordination among many parties: ILEC, CLEC, equipment vendors and the CLEC customer. Failure to meet a CCDD causes great inconvenience to the customer as well as to the other parties whose activities must be coordinated. "Average Installation Interval" (Item 6) is a necessary, but not sufficient, measure of performance parity for installation commitments, because it is possible for CLEC averages to be equal to ILEC averages, even though far fewer CLEC customers than ILEC customers experienced "mets." True performance parity requires that the same percentage of CLEC customers and ILEC customers experienced "mets."

Item 8: Installation Desired Due Dates Met

What: “Installation Desired Due Dates Met” measures the percentage of jobs that are completed in the interval requested by the customer.

Why: Many customers request “expedited” due dates, and even for “normal” due dates, the ILEC will not always be able to commit to installation in the time frame requested by the customer. Meeting the dates promised by the ILEC (item 7) means little if those commitment dates seldom match the dates desired by the customer. “Installation Desired Due Dates Met” must be reported because it measures the ILEC’s flexibility and impartiality in meeting the requested dates of its own and the CLECs’ customers.

Item 9: New Service Trouble Experienced Within 30-Days of Installation

What: Measures the percent of ILEC facilities that exhibit troubles within 30 days of installation by the ILEC.

Why: A customer’s first impression of a CLEC’s service is largely influenced by the first 30 days of service. Troubles within 30 days of installation most likely indicate that the installation itself was faulty and points to a risk of further troubles for the CLEC customer.

Item 10: Premature Disconnect

What: Measures the percent of cases where the ILEC disconnects service to a customer before the time committed to by the ILEC.

Why: The ILEC must disconnect its service to a customer switching to a CLEC at an agreed date and time so that service can be transferred to the CLEC customer seamlessly, without disruption of the customer’s service. Strictly speaking there is no comparable function that an ILEC performs for itself. If the ILEC disconnects its service before the customer concurred time, the customer will go without service until CLEC service is connected to the customer. A premature disconnect by the ILEC will prevent a seamless

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transition between carriers. Requiring ILECs to report on disconnects worked prematurely will ensure that the ILEC has an incentive not to disconnect customers prematurely.

Item 11: Delayed Orders Compared to Total Orders Placed

What: Measures the percentage of orders delayed beyond the Customer Concurred Due Date (CCDD).

Why: The ILEC has an obvious competitive incentive to fill its own orders before those of its competitors. Various reasons - such as lack of equipment - may be offered as excuses for delay. A requirement to measure comparative data on "Delayed Orders Compared to Total Orders Placed" will encourage ILECs to complete all activities necessary to meet the due date.

Item 12: Delayed Order Interval To Completion Date

What: Measures the actual delayed order interval, prior to completion of the order.

Why: Delayed orders should be cleared as soon as possible, and the average elapsed time before delayed orders are cleared should be equivalent for ILEC and CLEC customers. If the average time is the same, however, it is still necessary to measure the proportion of long delayed order intervals (Item 13).

Item 13: Delayed Orders Cleared After 30 Days

What: Measures the percentage of orders delayed for a period of more than 30 days.

Why: Delayed orders should be cleared as soon as possible. Requiring ILECs to report comparative data on the proportion of orders cleared after 30 days of delay will encourage ILECs to clear any delayed orders for CLEC customers with the same efficiency as it does for its own customers.

Item 14: Coordinated Customer Conversion

What: Measures the interval between the time the ILEC establishes a physical connection between the CLEC facilities to the local loop of a customer and the time the ILEC enters information into the proper databases that will allow calls to the customer to be routed properly via number portability.

Why: When a CLEC purchases an unbundled loop from the ILEC while concurrently requesting number portability, the ILEC must perform two different tasks for a CLEC to be able to provide service to the customer. First, the ILEC must establish the physical connection between the CLEC's facilities to the local loop serving the customer. Second, the ILEC must enter information into the proper databases so calls to the customer are routed to the CLEC's switch. Both of these steps must take place at nearly the same time, or the customer will experience an extended period where it does not have any telephone service. If the physical connection is completed without the database updates, then calls to the customer will be routed to a switch (the ILEC's) to which the customer is no longer connected and the call will be dropped. If database updates are made without the physical connections being completed, the call will be sent to a switch (the CLEC's) to which the customer is not yet connected, and the call will be dropped. Measuring what ILEC technicians term "Customer Affecting Coordinated Conversion Window" is essential to assure that the ILEC performs these tasks for the CLEC just as efficiently as it does when it implements upgrades or conversions for its own customers.

Maintenance/Repair

Maintenance refers to keeping a network functioning smoothly and adequately, while repair refers to fixing a problem once it has been reported as a "trouble" by a customer. Since the number of troubles and repair performance depend largely on how well the network is

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groomed and maintained in the first instance, TCG's suggested performance measures treat Maintenance/Repair as one category.

Item 15: Mean Time To Repair (MTTR)

What: Measures the average length of time it takes the ILEC to repair ILEC facilities.

Why: The most important issue to a customer regarding an outage is the duration of the outage. Requiring the ILEC to report comparative data on "MTTR" will encourage the ILEC to repair a trouble or restore service as quickly for a CLEC customer as it does for its own retail customers.

Item 16: Out-of-Service Cleared in X Hours or Less

What: Measures the percentage of troubles for service to a CLEC customer or ILEC customer that are cleared by the ILEC in a standard time frame.

Why: Customers expect service outages to be cleared within a certain time frame. This interval, by industry practice, varies according to the circuit type used by the carrier to serve the customer. Digital-capable loops, DS-0s and DS-1s are subject to restoral interval goals of 3 hours, DS-3s to 2 hours, and analog circuits to 12-hours. "Out of service restoral within X hours" compares the percent of restorals made for the ILEC's customers and the CLEC's customers within the interval relevant to each type of circuit. This measure is necessary because MTTR could be identical for ILECs and CLECs even though CLECs experience many outages that last much longer than the ILEC norm for clearance. This measure is intended to preclude a situation in which the ILEC provides the same average time to repair for CLECs as for itself by taking a very long time to repair some CLEC outages and clearing some CLEC outages in a very short time. The few long CLEC intervals could be very damaging to CLECs.

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Item 17: Repair Commitments Met

What: Measures the proportion of the time that the ILEC repairs facilities in the time frame that it promised to either a CLEC or an ILEC customer.

Why: CLECs must rely on promises made by the ILEC to the CLEC when making representations to the CLEC customer as to the time required to complete a repair and restore service. The ILEC will not be providing performance parity if it fails to timely complete repairs more often for the CLEC than it fails to meet its restoral commitment for its own customers. CLEC customers will be harmed if repair commitments made to ILEC customers are met more often than repair commitments to CLEC customers.

Item 18: Repeat Trouble within 30 Days of Previous Trouble

What: Measures the proportion of the time that a facility installed by an ILEC becomes deficient within 30 days of the last repair by the ILEC of that facility.

Why: It is TCG's experience that repeat troubles within 30 days of the repair of facilities tend to point to faulty initial repairs, and are particularly harmful to a CLEC customer. This proposed measure encourages ILECs to correct troubles properly for CLEC customers.

Item 19: Status Calls According to ILEC Processes

What: Measures the time interval in which ILEC and CLEC personnel are provided with updated information regarding the status of trouble tickets.

Why: ILECs typically update the status of trouble tickets electronically at regular time intervals (e.g., every 30 minutes). Whatever the time interval, and regardless of whether status reports to CLECs are oral (as now) or electronic (as expected), CLECs must have access to ILEC status reports relating to CLEC troubles within the same time interval as the ILEC enjoys to ensure that CLECs can properly service their customers. The ILEC must time stamp

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all updates that refer to CLEC customer troubles so that the CLECs are assured that they are reporting timely information to their customers.

Billing

TCG, as a facilities-based carrier, maintains its own billing functions for its own customers, so when providing service from its own switch TCG does not need any information from ILECs regarding customer usage. However, TCG -- like all CLECs -- must establish a billing relationship with the ILEC related to the exchange of traffic where each carrier bills the other carrier for local traffic terminated on its network.

Item 20: Response to Billing Inquiry

What: Measures the proportion of the time that the ILEC acknowledges a billing inquiry within the same time frame the ILEC acknowledges its own customers' billing inquiries or within 24 hours of receipt, whichever is less.

Why: To resolve CLEC billing inquiries quickly, a "clock" should start promptly. The ILEC may have an internal response standard for response to billing inquiries which is less than 24 hours, in which case, responses to CLEC billing inquiries should be made within that time frame, and the measure should report the percent of time the response is made to both ILEC customers and CLECs within that time frame. Generically, no more than 24 hours should elapse before an ILEC acknowledges the CLEC billing concern and begins to investigate the issue.

Item 21: ILEC End User Calls Misrated, Sorted by Called-To Carrier

What: Measures the rate at which calls from an ILEC customer to a CLEC customer are misrated.

Why: CLEC customers have been adversely affected when ILEC customers calling them were charged toll rates by the ILEC rather than local rates because the ILEC's billing system incorrectly calculated charges. For example, if an

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ILEC customer calls a CLEC customer in the local service area, the caller would be surprised and confused when he/she receives the toll-rated charges. If the called party is a business, misrating could discourage callers from continuing to deal with the business, and diminished calls could lead the CLEC customers to change back to the ILEC.

Item 22: Accuracy of Payphone Rating Table

What: Measures the rate at which ILEC and NXX codes are misrated in the ILEC's pay phone tables.

Why: Similar misrating of calls may occur when a customer calling from an ILEC pay phone to a CLEC customer is over-charged. Over-charging would have the same potentially harmful impact on the CLEC business customer as in item 21.

Operator Services and Directory Assistance

The FCC's Interconnection Order makes it clear that the Act requires ILECs to make available operator services and directory assistance services to CLEC customers that are at least equal in quality to what it provides on its own behalf to ILEC customers.⁸ Each of the following measures must be separately reported for operator services and directory assistance.

Items 23: Mean Time To Answer

What: Measures the average time it takes an ILEC operator to answer calls placed by ILEC customers and CLEC customers.

Why: An ILEC can tell (by the identity of a trunk group or terminal) whether a caller is an ILEC customer or a CLEC customer. An ILEC could subject

⁸ In re Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, CC Docket 96-98, August 8, 1996 at ¶534.

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CLEC callers to long waiting periods before an ILEC operator responds. The response time of the ILEC DA or OA operator must be compared for CLEC customers and ILEC customers.

Items 24: Mean Hold Time

What: Measures the time ILEC or CLEC customers are put on hold while an ILEC operator accesses the desired information.

Why: For the same reasons as in item 23, it is necessary to protect CLEC customers from being put on hold for abnormal periods after the ILEC operator has connected.

Item 25: Call Abandonment (Hang-up)

What: Measures the rate at which calls to an ILEC operator by ILEC and CLEC customers are terminated before the desired information is attained.

Why: Protects CLEC customers from having their calls terminated before the requested information is accessed.

Items 26: Call Blockage

What: Measures the rate at which ILEC and CLEC customers are absolutely unable to access the ILEC operator due to insufficient ILEC trunking capacity or faulty ILEC connections.

Why: Ensures that a CLEC customer will always be able to access an ILEC operator. Data are recorded at the ILEC's network management center (NMC) as a normal function of network management.

Items 27: Average Work Time

What: Measures the length of time it takes an ILEC operator to answer a query from ILEC and CLEC customers.

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Why: Protects CLEC customers from waiting a long time for a response by an ILEC operator.

Network Performance

TCG has experienced numerous and continuous problems with ILECs that fail to provision adequate facilities to accommodate all traffic from the ILEC's customers to TCG's customers. The result is incomplete calls which the CLEC's customers know nothing about. Many of these failures result from inadequate trunking or switching capacity between the ILEC's end office and its tandem, although some are caused by inadequate interconnection trunks or switching from the ILEC to the CLEC. An ILEC can represent the blocked-call problem to its customers as one caused by the fact that the call is going "off" the ILEC's network. The competitive incentive to provide inadequate interconnection facilities can be mitigated by performance measures for call blockage. Such measures are at the top of the list of "must haves" for CLECs.⁹

Item 28: Ratio of Calls Blocked to Calls Attempted

What: Compares the percent of calls originated by ILEC customers that do not complete to CLEC customers, to the percent of intra-ILEC calls that fail to complete.

Why: Blocked calls point directly to a lack of adequate planning or performance on the ILEC's part -- suggesting a high probability of willful misconduct. The ILEC must provide adequate trunk and switch capacity and reliability within its network and between its network and the CLEC network to route calls to CLEC customers with no greater call blockage than the ILEC itself experiences.

⁹ In denying Ameritech's application to enter the long distance market in Michigan, the FCC noted in particular that detailed information about trunk blocking is needed to evaluate whether an ILEC is meeting its performance parity obligations. Application of Ameritech Michigan to Provide In Region InterLATA Services in Michigan, CC Docket No. 97-137, FCC 97-298 (August 19, 1996) ("Ameritech Order") at paragraphs 232-235 and footnote 605.

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CLECs forecast traffic volumes and add additional trunk groups and switching capacity to handle outbound calls including calls to ILEC customers. The ILEC must also accurately forecast traffic volumes from its customers to the CLEC, and provide adequate peak-hour capacity. Whether one-way or two-way trunking is used, capacity must be sufficient to provide performance parity. ILECs must not be allowed to thwart CLECs' ability to serve their customers by refusing to install sufficient trunks or switch capacity in a timely manner, or by failing to maintain CLEC-specific facilities (such as interconnection trunks) at the same level as the intra-ILEC network.

Code Opening

Management of the customer's telephone number is critical to CLEC customers regardless of whether the CLEC is serving customers entirely on its own network or by use of unbundled ILEC loops. The suggested performance parity measures are based on the tasks that the ILEC must perform when it uses new NXX codes for its own customers or corrects NXX-related problems for its own customers. These concerns will remain even after the North American Numbering Plan Administrator takes over the responsibility for assigning telephone numbers.

Item 29: NXX Loaded and Tested Prior to LERG Effective Date

What: Measures the proportion of ILEC and CLEC NXX codes that are loaded in essential databases and tested for functionality prior to the Local Exchange Routing Guide (LERG) effective date.

Why: A CLEC customer can't receive a call from an ILEC customer (a majority of the potential callers) until the ILEC has updated its databases and switches to reflect the proper routing information to new NXX codes used by the CLEC. The CLEC cannot provide full local exchange service to its customers until the ILEC has made the proper updates. Therefore, it is

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important that the ILEC make these updates in the same manner that it would for its own customers. For the purpose of this measure, TCG suggests the LERG effective date since this is the first date that either a CLEC or an ILEC would be able to serve a customer with a new code.

Item 30: MTTR For NXX Troubles

What: Measures the average time it takes the ILEC to resolve troubles that prevent ILEC customers from reaching CLEC customers having a particular NXX.

Why: It has unfortunately been TCG's experience that ILECs, from time to time, drop NXXs from their switches and/or databases after the NXXs have been correctly entered. This is a serious issue because customers with numbers that belong to a dropped NXX are unable to receive calls until the problem is resolved.

In the past, TCG has asked for explanations from the ILECs when NXXs are dropped. While answers are usually unavailable, human error and willful misconduct are the logical explanations. Since ILECs have the competitive incentive to restore their own codes as quickly as possible, ILECs should correct troubles for CLEC NXX codes in time frames that are "at least equal" to the time frames in which the ILECs correct ILEC NXX problems.

Emergency Services (911)

CLECs have certain obligations to the state to provide adequate emergency services to their customers. To meet these, CLECs supply location and numbers of all customers for entry into the "911" databases which the ILECs typically control. (States historically gave ILECs ownership of the "911" databases and only the ILECs can ensure that data supplied by the CLECs is entered promptly and correctly.) A delay in timely database updates will delay CLECs from providing consumers with competitive local exchange service because CLECs are not allowed to -- and TCG as a matter of policy will not -- offer basic local exchange

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telecommunications service without 911 capability. Improper entry can also endanger lives.¹⁰

Item 31: Selective Router Update within 24 hours

What: The selective router is a database that sends an emergency call to the correct dispatch center based on the telephone number of the calling party. This item compares the proportion of CLEC customer numbers that are entered by the ILEC into the selective router database within 24 hours of receipt to the proportion of ILEC customer numbers entered within the same time frame.

Why: CLECs will rely on the ILEC to enter information required to determine the dispatch center associated with each of the CLECs' customers. Reporting on "Selective Router Update within 24 hours" will encourage the ILEC to input information regarding CLEC customers into the Selective Router database in a timely manner.

Item 32: ALI Database Update within 24 Hours

What: The ILEC typically has responsibility for managing the Automatic Location Identifier (ALI) database which correlates each telephone number with an address so that emergency services can be dispatched to the correct location. This item measures the proportion of customer numbers that are entered by the ILEC into the ALI database within 24 hours.

Why: Reporting on "ALI Database Update within 24 hours" encourages the ILEC to input the information for CLEC customers into the ALI database in a timely manner.

¹⁰ The Michigan Commission has stressed that "the public must not wait until [parity of database entry] . . . results in serious harm before [the RBOC] can be required to fix the problem." In re Complaint of the City of Southfield against Ameritech Michigan, Opinion and Order, Michigan Public Service Commission, Case No. U-11229, Sept. 30, 1997 at 12.

Item 33: ALI Database Update Accuracy

What: Measures the proportion of accurate ILEC inputs into the ALI database for ILEC and CLEC customers.

Why: The ILEC must enter the exact data received from the CLEC. If manual entries are made, the ILEC must ensure that no mistakes are made during the process of copying or keying in data.

Item 34: Selective Router Update Accuracy

What: Measures the proportion of accurate entries into the selective router database for ILEC and CLEC customers.

Why: The ILEC must enter the exact data received from the CLEC. If manual entries are made, the ILEC must ensure that no mistakes are made during the process of copying or keying in data.

Item 35: MSAG System Access Response Time

What: The Master Street Access Guide (MSAG) is a list of addresses served by a particular emergency services agency. This item measures how long it takes the ILEC to provide the MSAG to a CLEC upon request.

Why: Carriers require access to the MSAG in order to obtain the proper address citation form so that it can be correctly entered into the ALI database. Therefore, if the ILEC does not timely furnish the MSAG to the CLEC, the CLEC will be delayed in entering properly formatted data in the ALI database.

Directory Listings

Item 36: Directory Listings Database Update Completion Interval

What: Measures the average time interval the ILEC takes to update its directory listing database for a new ILEC or CLEC customer, or when some information regarding such a customer (address or phone number or name)

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has changed.

Why: Mandatory ILEC reporting of comparative data will encourage the ILEC to enter the numbers of CLEC customers into the database in a reasonable time frame.

Item 37: Directory Listings Database Update Interval

What: Measures the percent of the time that the ILEC completes updates of information regarding ILEC and CLEC customers into the directory listings database within the same time interval. Most ILECs have committed to 24 hours as a reasonable time frame to allow this process.

Why: This information must be collected in addition to item 36 to prevent a situation where the average interval is the same between an ILEC and a CLEC, but the ILEC nonetheless delays entry for some CLEC customers' for much longer periods of time than it delays information entry for its own customers. Delayed updates inconvenience customers and are not acceptable to them.

Item 38: Directory Listings Electronic Interface Availability

What: Measures the percentage of the time that an electronic interface allows the ILEC and the CLECs to input customer information directly into the directory listings database.

Why: Mandatory ILEC reporting will ensure that CLECs have an equal ability to transmit information about CLEC customers electronically to the directory listings database.

THE MINIMAL BURDEN TO THE ILECS OF REPORTING ON COMPARATIVE PERFORMANCE DATA IS OUTWEIGHED BY THE COMPETITIVE BENEFITS

The burden on the ILEC of reporting on TCG's proposed performance measures should be minimal. The ILECs' automated systems should already create the objective data needed to compare performance measures,¹¹ particularly for provisioning and maintenance.¹² Even in those cases when an ILEC does not already record one of TCG's proposed performance measures, requiring the ILEC to begin recording and reporting such data is necessary in order to ensure that the ILEC satisfies the performance parity principle. The expansion of effective local exchange competition giving consumers choice as quickly as possible is well worth any additional ILEC effort required.

The ILEC is free to use manual or electronic means to satisfy its performance parity requirements. In all likelihood, however, as competitors' volume increases, the ILEC will be unable to accomplish parity without the cost-saving use of electronic interfaces between ILEC and CLEC Operations Support Systems (OSS). Should the ILEC continue to rely on manual means such as faxing, the ILEC must provide quality control and personnel management sufficient to achieve parity where ILEC measures exist, and sufficient to ensure parity in consumer service where such measures do not now exist. Should the ILEC choose to use electronic interfaces rather than manual means to satisfy its parity requirements, then facilities-based CLECs must be able to access the ILEC OSS as efficiently as the ILEC accesses them. TCG's upcoming white paper will deal with OSS electronic interfaces as a means of achieving performance parity.

¹¹ See Affidavit of Michael J. Friduss on Behalf of the Antitrust Division of the Department of Justice, Evaluation of the U.S. Department of Justice, In re Application of SBC Communications Inc. et al. Pursuant to Section 271 of the Telecommunications Act of 1996 to Provide In-Region, InterLATA Services in the State of Oklahoma, CC Docket No. 97-121 (May 16, 1997).

¹² For example, ILECs have automated data acquisition systems (DAS) that count minutes and report on them in various ways. One output of the DAS is Trunking Service Reports. The DAS includes Trunk Service Systems (TSS), Total Network Data Systems (TNDS) and Engineering and Data Acquisition System (EADAS).

CONCLUSION

It is the **outcome of performance parity** that is required by the Act. Performance parity measures must be adopted immediately, even while recognizing that over time the measures may be expanded, reduced or changed with changing needs. To the extent feasible, measures should be comparable (if not identical) for all ILECs. This will reduce ILEC opportunities to “game” the regulatory process and facilitate state regulatory enforcement of interconnection agreements between ILECs and CLECs. TCG hopes these Model Performance Parity Measures for facilities-based competition will begin the process of creating a nationally uniform set of performance parity measures.

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Measuring Performance Parity:

Equal Risk, Fair Results

March 1998



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Introduction

Under the 1996 Telecommunications Act, each competitive local exchange carrier ("CLEC") is entitled to interconnection with each incumbent local exchange carrier ("ILEC")¹ that is at least equal to what the ILEC provides for itself.² TCG refers to this legal standard as the "Performance Parity Principle." In two earlier White Papers, TCG discussed two critical aspects of the Performance Parity Principle.³ In *The Performance Parity Principle*, TCG detailed the statutory obligations of the ILECs to provide interconnection and unbundled elements to CLECs that is at least equal to that which the ILECs provide to themselves. In *Model Performance Parity Measures for Facilities-Based Competition*, TCG identified the 38 ILEC interconnection and unbundling functions for which the ILEC must demonstrate its compliance with the "at least equal" standard. In this paper, TCG proposes a fair and efficient approach to analyzing ILEC performance data - an approach that minimizes the enforcement burdens on public utility commissions, CLECs, and ILECs.

"Stare and Compare"

To enforce performance parity, it is necessary to compare the performance of the ILEC for itself, its performance for each interconnecting CLEC, and its performance for other entities. Under the act, the ILEC cannot discriminate nor treat itself or its customers any better than it treats an interconnecting

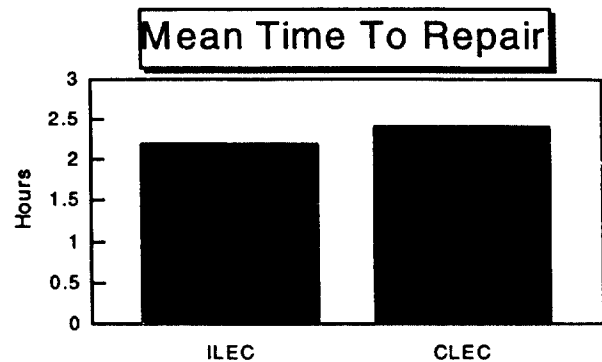
¹ Under certain circumstances, rural carriers are exempt from these obligations.

² 47 U.S.C. §251(c)(2)(c) and 47 U.S.C. § 251(c)(3).

³ *The Performance Parity Principle*, July 1997 and *Model Performance Parity Measures for Facilities-Based Competition*, November 1997.

local competitor. Any deviation from performance parity is illegal and subjects the ILEC to civil penalties.

The question is: How should the ILEC demonstrate easily and efficiently that it has met the Performance Parity Principle? A simple “stare-and-compare” test of the ILEC’s performance



“Stare and Compare”

for itself and for each CLEC would seem to indicate whether or not the ILEC is complying with the law. For example, if the ILEC’s mean time to repair (“MTTR”) for itself was 2 hours 15 minutes, and for a CLEC it was 2 hours 20 minutes, then the CLEC could legitimately claim that its treatment was not “at least equal” and that the ILEC was violating the law.

One might challenge this simple comparison, however, as not *statistically* sound. That is, the difference of five minutes in performance might be no more than a random occurrence. Consider 100 tosses of a coin, for example. If the coin landed “heads” 54 times and “tails” 46 times, one would not conclude that the coin was biased in favor of “heads.” The deviation from the 50-50 split is within the range of results that might occur by chance. Similarly, if in measuring Performance Parity the ILEC’s performance for its own customers was only “marginally” better than its performance for the CLEC’s customers, the ILEC could reasonably argue that the variation was simply a chance occurrence and not statistically significant.

A strict interpretation of the Telecommunications Act leaves no doubt that, chance or not, the ILEC is obligated to provide “at least equal” service, even if that means taking extra steps to eliminate or to minimize the possibility of chance occurrences. However, TCG recognizes that under certain circumstances, a certain degree of variability is difficult to control and that it may not necessarily be harmful. Furthermore, consistent strict interpretation of the “at least equal” standard could induce the CLECs and ILECs to litigate issues that have minor practical impact on their businesses. This would certainly impose costs on the CLECs and divert resources from investment in competitive infrastructure. State public utility commissions would also incur unnecessary costs adjudicating such disputes. To avoid unnecessary costs and policing, TCG proposes a simple statistical approach that captures the simplicity of “stare-and-compare” while allowing for flexible, reasonable, and statistically valid compliance with the “at least equal” standard.

Statistical “Helpers”

Before describing our approach, we must digress briefly into a discussion of statistics. Statistics help analysts draw a picture of reality based on partial information. In statistics, one rarely observes the entire universe of events that one is trying to evaluate. In the case of evaluating a coin for fairness, one records only a finite number of flips, whether it is 10 flips or a billion flips, or any number of flips in between. No matter how many times one flips the coin it is still a finite number, far less than the infinite flips that are possible. That finite number is called a *sample* and the infinity of flips is called the *population*. Because we seldom observe the entire population, statistics

allow analysts to draw a reasonable conclusion about the entire population based on a sample from that population.

There is a catch, however: coming to a conclusion about the population based on a sample is an inherently risky exercise. The sample may not represent the underlying population, perhaps leading the statistician to an incorrect conclusion. To minimize the risk of committing such an error, the statistician “hedges” by allowing for a certain amount of variability in the sample data before coming to a conclusion. The extent of that permitted variation will depend on the **risks of coming to the wrong conclusion** and it is the key to ensuring fair and proper enforcement of the Performance Parity Principle.

A statistician risks making two types of errors that are inherent in statistical analysis, and each is best explained in terms of the coin flip. First, there is the risk that the statistician might conclude that a coin was biased when, in fact, it was fair. Second, there is the risk that the statistician might conclude that the coin was fair when, in fact, it was biased. The challenge facing the statistician is how to balance the risks of these two types of errors. If the statistician is concerned with the first type of error, he or she will not conclude that the coin is biased unless the deviation from the 50-50 split is relatively large. On the other hand, if the statistician is more concerned with the second type of error, he or she will conclude that the coin is biased if the deviation from the 50-50 split is relatively small. The rest of this paper explores the means for determining the size of that deviation in a manner that **balances the interests of both CLECs and ILECs.**

Applying “Equal Risk” to Interconnection

In terms of interconnection, the sample data would be the number times the ILEC performed an operation for itself and for the CLEC during a specific time period (e.g., one month, one calendar quarter), while the population would be every possible instance of the operation that the ILEC might perform for itself and the CLEC for as long as the networks might be interconnected. Because we will never be able to observe the population of ILEC performance, the state commission or other enforcement body must rely upon statistical analysis to determine ILEC compliance with the law.

In doing so, the commission might make one of the two possible errors discussed above. First, based on the sample observations, the commission could conclude that the ILEC is not adhering to the Performance Parity Principle when, in fact, it is. The ILEC, of course, would like to minimize that possibility. Conversely, the commission could conclude that the ILEC is meeting the “at least equal” standard when, in fact, it is not. CLECs would like to minimize that possibility.⁴

As noted earlier, each type of error has a certain amount of risk associated with it. In the interest of fairness, therefore, TCG proposes that the deviation from the simple “stare-and-compare” be based on equalizing the risks associated with each type of error. That way, each carrier bears the same statistical risk of an erroneous conclusion counter to its own interest.

This approach is only marginally more complex than a simple “stare-and-compare” analysis: in the simple “stare-and-compare” case, the commission

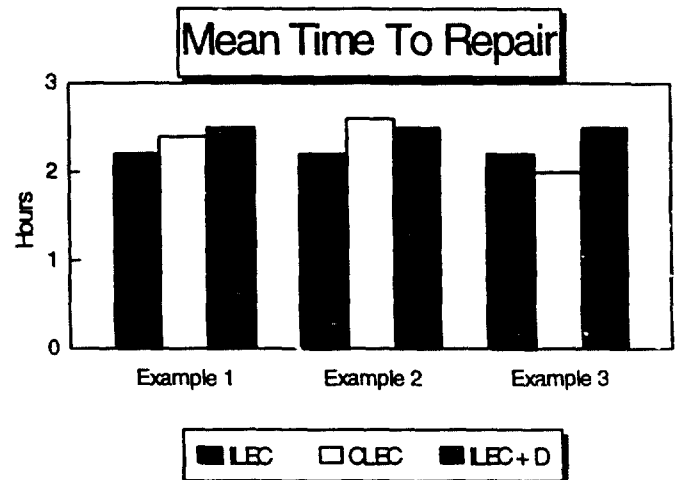
⁴ If a Commission is to err, it should err on the side of “strict enforcement.” The public interest is best served by the development of a vigorously competitive market, and that cannot happen if incumbent monopolists are permitted to abuse their market power.

would reject any performance that was not “at least equal” now it simply rejects any performance that is not equal by a specific amount, “D.”

Consider the following examples:

In general, so long as the top of the bar representing the performance provided to a CLEC is lower than the top of the “ILEC + D” bar, the CLEC is likely to be receiving “at least equal” treatment and the ILEC should be considered in compliance with the statute. If the bar representing the performance provided to a

CLEC is above the “ILEC + D” bar, then the CLEC is not receiving “at least equal” treatment and the ILEC is violating the statute. In Example 1, the simple “stare-and-compare” conclusion would be that the ILEC is violating the Performance



Parity Principle because the CLEC’s MTTR exceeds the ILEC’s. However, the difference in performance cannot be considered significant because it is less than the statistically valid value of D, as represented by the last bar in each cluster. Example 2 shows a clear cut case of the ILEC in violation of the standard, and Example 3 shows a clear cut case of the ILEC in compliance. Similar charts could be drawn for each of the 38 ILEC activities identified by TCG in *Model Performance Parity Measures for Facilities-Based Competition*.